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**Panel on Information Technology and Broadcasting**

**Meeting on 12 February 2018**

**Updated background brief on arrangements for  
the frequency spectrum in the 900 MHz and 1800 MHz bands  
upon expiry of the existing frequency assignments**

**Purpose**

This paper provides background information on the Administration's arrangements for assigning the frequency spectrum in the 900 MHz and 1800 MHz bands ("900 MHz and 1800 MHz Spectrum") upon expiry of the existing frequency assignments and summarizes the major views and concerns previously expressed by members of the Panel on Information Technology and Broadcasting ("the Panel").

**Background**

2. At present, a total of 198.6 MHz of frequency spectrum, comprising 49.8 MHz in the 900 MHz band and another 148.8 MHz in the 1800 MHz band has been assigned to four mobile network operators<sup>1</sup> ("MNOs") for the provision of public mobile telecommunications services<sup>2</sup>. These spectrum assignments are due to expire between 19 November 2020 and 29 September 2021. Together with the 0.2 MHz of spectrum in the 900 MHz band and 1.2 MHz of spectrum in the 1800 MHz band which is currently vacant, a total of 200 MHz of spectrum in the 900 MHz and 1800 MHz Spectrum will be available for re-assignment upon the expiry of the existing assignments ("re-assignment of the 900 MHz and 1800 MHz Spectrum").

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<sup>1</sup> China Mobile Hong Kong Company Limited, Hong Kong Telecommunications (HKT) Limited, Hutchison Telephone Company Limited, and SmarTone Mobile Communications Limited.

<sup>2</sup> Including the provision of the second, third and fourth generation ("2G", "3G" and "4G") mobile services.

3. The Administration had conducted two rounds of public consultation in February 2016 and February 2017 to solicit views and comments of the telecommunications industry and other affected persons on the arrangements for the re-assignment of the 900 MHz and 1800 MHz Spectrum and the related Spectrum Utilization Fee ("SUF").

4. On 19 December 2017, the Communications Authority ("CA") decided to adopt a hybrid administratively-assigned cum market-based approach ("hybrid approach") to re-assign the 200 MHz of spectrum in the 900 MHz and 1800 MHz Spectrum upon the expiry of their existing assignments. The Secretary for Commerce and Economic Development ("SCED") also announced on the method for determining the related SUF.

5. The four incumbent MNOs will be offered a right of first refusal to be re-assigned 20 MHz of spectrum ("RFR Spectrum") in the 1800 MHz band administratively under the hybrid approach. The remaining 70 MHz of spectrum in the 1800 MHz band and the 50 MHz of spectrum in the 900 MHz band will be re-assigned by way of auction ("Auctioned Spectrum").

6. Considered that second generation ("2G") services can only be provided by the 900 MHz and 1800 MHz Spectrum and the 1800 MHz band is also the primary frequency band supporting the provision of fourth generation ("4G") services in some of the MTR stations and the adjoining tunnel areas, the Administration decided to deviate from the full-fledged market-based approach and adopt the hybrid approach to ensure customer service continuity in relation to 2G services and the provision of 4G services in some MTR stations by the time of the re-assignment of the 900 and 1800 MHz Spectrum.

7. The new spectrum assignment period for all the spectrum in the 900 MHz band will commence on 12 January 2021 for a 15-year period until 11 January 2036. For the spectrum in the 1800 MHz band, the new spectrum assignment period will commence on 30 September 2021 for a 15-year period until 29 September 2036.

8. For the related SUF, the auction reserve price for the Auctioned Spectrum in both the 900 MHz and 1800 MHz bands will be set at \$38 million per MHz. As for the RFR Spectrum which falls in the 1800 MHz band, the SUF per MHz will be set at the average SUF per MHz of the Auctioned Spectrum in the 1800 MHz band as determined by auction, subject to a minimum price of \$54 million and a cap of \$70 million.

9. The Administration will propose subsidiary legislation under the Telecommunications Ordinance (Cap. 106) to enable the re-assignment of the 900 MHz and 1800 MHz Spectrum to proceed as per the decisions. Subject to the completion of the legislative process, RFR for the re-assignment of the RFR Spectrum will be offered to the incumbent MNOs in the second half of 2018 and the target date of the auction of the Auctioned Spectrum will be conducted at around the end of 2018.

### **Previous discussions**

10. The Administration briefed the Panel on 13 March 2017 on the arrangements for the 900 MHz and 1800 MHz Spectrum upon expiry for the existing assignments for public mobile telecommunications and the SUF.

### Continuation of Second Generation public mobile telecommunications services

11. Considered that the 2G services were supported solely by the 900 MHz and 1800 MHz Spectrum and there was still a sizable amount of 2G service subscribers in Hong Kong and that many of the Mainland visitors coming to Hong Kong were still using 2G services, the Panel was informed that licensees could apply to CA to terminate their 2G services if the number of 2G service subscribers had decreased to a level rendering it no longer cost-effective to continue with the service, on condition that appropriate plans were in place for the remaining 2G service subscribers to migrate to higher generation services.

### Provision of services in country parks and remote areas

12. Noting that MNOs operating their networks at the 900 MHz and 1800 MHz Spectrum were required to maintain a minimum of 90% coverage of the population, some members enquired what measures the Administration would impose to ensure that the remaining 10% of the population had access to mobile services or whether MNOs should be required to ensure that services would be provided to people living in remote areas.

13. The Administration responded that MNOs would be encouraged to provide mobile services in remote areas, in which 2×4 MHz of spectrum in the 1800 MHz band had been assigned to three MNOs for the provision of mobile coverage in the country parks and remote areas and no SUF was payable for such purpose. The Administration had also facilitated MNOs in installing base stations in country parks and remote areas, including allowing their use of government hilltop sites and buildings at nominal rental. Fixed network operators were also encouraged to enhance their Internet services by extending the optical fibre network to remote areas. The Administration considered that

it would be a major policy decision to require operators to provide network services to remote areas and wider discussion within the community would be necessary.

### Spectrum Utilization Fee

14. Some members expressed concerns about how the Administration could determine the full market value of the spectrum. They commented that the level of SUF should reflect its full market value. The Administration advised that SUF for spectrum to be auctioned would be determined through a competitive bidding process to reflect the full market value of the spectrum. This would ensure optimal use of the spectrum by assigning it to the MNOs which valued it the most.

15. Panel members queried whether the increase in SUF would be transferred to mobile service users, and would result in cost escalation in mobile service if the spectrum was auctioned off at a high price. The Administration responded that SUF only accounted for a small portion of MNO's operating cost and it was unlikely that an increase in SUF would result in an escalation of service charges for consumers. On average, the share of SUF relating to the 900 MHz and 1800 MHz Spectrum constituted less than 1% of the operating cost of MNOs.

16. In response to some members' suggestion on requiring MNO to provide a higher rebate for customers to buffer the increase in SUF, the Administration replied that the level of SUF would be set by the market through a competitive bidding process. To determine SUF administratively would not only be a deviation from the longstanding market-based approach adopted by the Administration on spectrum management, it would also be out of line with international practice.

17. The Panel was informed that contribution to public revenue was not a factor of consideration in the re-assignment of spectrum. The Administration would make reference to the auction reserve prices in the two most recent auctions in respect of the spectrum in the 2.5–2.6 GHz and 1.9–2.2 GHz bands conducted in 2013 and 2014 respectively to set the auction reserve price. A minimum price for the RFR Spectrum would be set to represent the estimated market value of the spectrum by making reference to the value of spectrum in frequency bands with similar propagation characteristics as determined in the two abovementioned assignments.

### Quality and continuity of mobile network services in MTR stations

18. Some members expressed concerned about the impact of re-assignment

of the 900 MHz and 1800 MHz Spectrum on the continuity of 4G services in MTR and commented that online service was slow in many areas along MTR lines. The Administration advised that 4G services had to be delivered using equipment operating in the 1800 MHz band and the delivery of mobile service in 43 of the MTR stations relied on legacy systems which could not flexibly accommodate changes in spectrum assignments to MNOs. More RFR spectrum in the 1800 MHz band would therefore be offered to the incumbent spectrum assignees to address the service continuity issue. The Panel was assured that the handover of the 900 MHz and 1800 MHz Spectrum would proceed equally seamlessly.

### Utilization of spectrum

19. Some members commented that MNOs had allowed the spectrum to lay idle until towards the end of the period for network and service rollout and used that spectrum to provide other kinds of mobile data services. The Administration advised that the operator concerned had used the spectrum for provision of wireless fixed network service in accordance with its plan in bidding for the spectrum. The Administration would consider whether similar terms should be offered to successful bidders of 900 MHz and 1800 MHz Spectrum to afford them the same flexibility over the choice of using the spectrum for wireless fixed services, mobile services, or a combination of both. The Administration considered that the operator was still providing services to users having regard to the market situation even the spectrum was only used to provide wireless fixed services in a small area.

### **Latest position**

20. The Administration will brief the Panel on 12 February 2018 on the decisions made by the CA and the SCED on the arrangements for the re-assignment of the 900 MHz and 1800 MHz Spectrum upon expiry of the existing frequency assignments and related SUF fee.

### **Relevant papers**

21. A list of the relevant papers is set out in the **Appendix**.

List of relevant papers

Issued by	Meeting date/ Issue date	Paper
Panel on Information Technology and Broadcasting	13 March 2017	<p>Administration's paper on arrangements for the frequency spectrum in the 900 MHz and 1800 MHz bands upon expiry of the existing assignments for public mobile telecommunications services and the spectrum utilization Fee  <a href="#">LC Paper No. CB(4)655/16-17(03)</a></p> <p>Updated background brief on arrangements for the frequency spectrum in the 900 MHz and 1800 MHz bands upon expiry of the existing frequency assignments  <a href="#">LC Paper No. CB(4)655/16-17(04)</a></p> <p>Minutes of meeting  <a href="#">LC Paper No. CB(4)802/16-17</a></p>
Communications Authority	19 December 2017	<p><a href="#">Press release</a></p> <p><a href="#">Joint Statement of the Communications Authority and the Secretary for Commerce and Economic Development</a></p>